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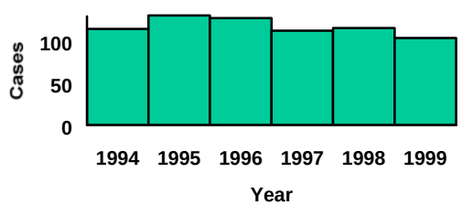
Tuberculosis Control in Seattle-King County, 1999

Reported cases of tuberculosis in Seattle-King County declined to 104 cases in 1999, down from 116 cases in 1998. Figure 1 shows the number of tuberculosis cases in Seattle-King County for the past 6 years.

Since the peak of 131 cases reported in 1995, there has been a 21% decline. Of 1999 TB cases, 57 (55%) were male and 47 (45%) were female; 73 (70%) were foreign-born. Cases ranged in age from <1 year to 94 years. Seven (7%) of the 104 cases died; two of these were diagnosed *post mortem*. Of the five cases who died during the course of treatment, tuberculosis was a contributing cause of death in three.

Figure 1. Reported Cases Of Tuberculosis Seattle-King County 1994-1999



Of the 104 cases reported in 1999, 56 (54%) Of the 104 cases reported in 1999, 56 (54%) were pulmonary TB, 18 (17%) were both pulmonary and extrapulmonary, and 30 (29%) were extrapulmonary alone. Among the pulmonary cases, 72 (97%) were culture-positive, and of those, 40 (56%) were sputum smear-positive. Among the 48 cases with extrapulmonary involvement, 16 (33%) were lymphatic, 11 (23%) were pleural, 11 (23%) were bone/joint; and 2 (4%) each were miliary and meningeal. The report of 11 cases of bone/joint tuberculosis in Seattle-King County in one year is extraordinary; usually no more than 2-4 cases of this particularly severe form of extrapulmonary tuberculosis are reported each year. Seven of these 11 bone/joint cases were female, and the median age was 34 years. Most were foreign-born (Somalia, 3 cases; Vietnam, 3 cases; Cambodia, Philippines, and Egypt, 1 case each).

Incidence rates

The incidence rate of tuberculosis in Seattle-King County in 1999 was 6.2 cases/100,000 population, compared with the Washington State rate of 4.5 cases/100,000 and the overall U.S. rate of 6.4 cases/100,000. In Seattle-King County, males had a rate of 6.9; females, a rate of 5.6. The rates of TB in persons of non-white races were 7 to 18-fold higher than that in persons of white race (Table 1). Of cases in white persons, 24% were foreign-born; in Blacks, 63%; in Asians 90%; and 100% of Hispanic cases were foreign-born.

Table 1. Incidence Rate* Of Tuberculosis By Race Seattle-King County 1999

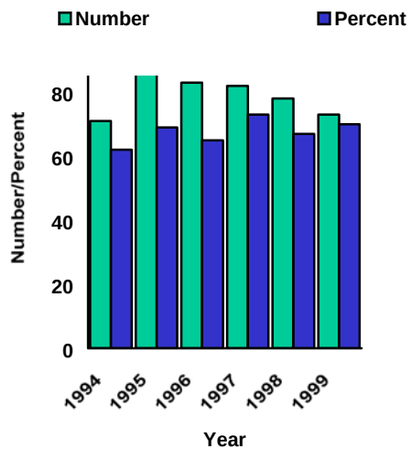
Race/Ethnicity	Rate	Cases	Relative Risk
Black, non-Hispanic	29.2	26	18.3
Asian/Pacific Islander	28.3	47	17.7
American Indian/Alaska Native	15.9	3	9.9
Hispanic, all races	12.2	7	7.6
White, non-Hispanic	1.6	21	1.0

* Rate per 100,000 population

The TB incidence rate in residents of Seattle, 16.6 cases/100,000, was almost 12 times that of residents of King County residing outside of Seattle (1.4 cases/100,000). Analysis of 1999 cases by zip code of residence indicated that downtown Seattle, the neighborhoods immediately east and south of downtown, and the Georgetown and Rainier Valley neighborhoods continue to have the highest rates of tuberculosis. These five zip codes, though home to only 5.6% of city and county residents, were reported as residence of 35% of TB cases; these neighborhoods had an aggregate incidence rate of 39.3/100,000, over 6 times that of the city and county as a whole.

Birth in a geographic area where TB is highly endemic was again the most important risk factor for TB in 1999, accounting for over 70% of cases. Foreign-born cases had immigrated from 22 countries: 16 from Vietnam, 15 from countries of Eastern Africa, 7 from the Philippines, 6 from Mexico, 5 each from China and India, and 4 from countries of Eastern Europe. Figure 2 illustrates that in recent years, approximately 60% to 70% of TB cases have occurred in foreign-born persons.

Figure 2. Tuberculosis In Foreign-Born Persons, Seattle-King County, 1994-1999



Other risk factors

Among the other important risk factors for TB in the county, 13 patients (three foreign-born) were homeless and five (one foreign-born) were contacts of recent TB cases. For the first time since 1984, when the association between tuberculosis and HIV infection was first reported in Seattle-King County, no case of TB occurred in a person known to be HIV-positive. Of the 104 reported cases, 62 (60%) were tested and HIV-negative; the remaining 42 cases are primarily elderly foreign-born persons felt to be at low risk for HIV. The decline in TB among homeless persons (Figure 3), and the absence of cases in HIV-infected persons (Figure 4) in 1999 is remarkable in view of the TB outbreak that occurred in the fall of 1998 among residents of a housing facility for previously-homeless, HIV-infected persons (described in the October 1998 Epi-Log).

Figure 3. Tuberculosis In Homeless Persons Seattle-King County 1994-1999

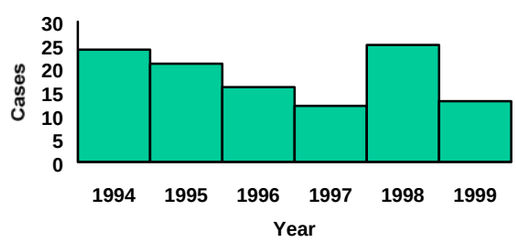
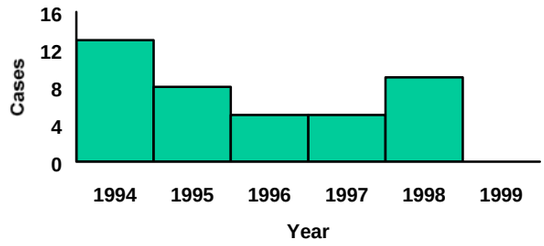


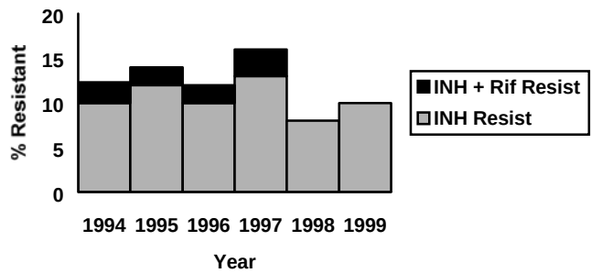
Figure 4. Tuberculosis in HIV-Infected Persons, Seattle-King County, 1994-1999



Drug susceptibility

A culture positive for *Mycobacterium tuberculosis* was obtained for 93 (89%) 1999 cases, and all of these cases had drug susceptibility testing performed. Ten isolates (11%) were resistant to isoniazid and none were resistant to rifampin. Nine (90%) of the 10 isolates showing isoniazid resistance were from foreign-born cases, giving a prevalence of drug resistance of 14% (9/64) among foreign-born culture-positive cases. The prevalence of drug resistance in U.S.-born cases was 3% (1/29). The prevalence of drug resistance in Seattle-King County TB cases has remained relatively stable for the past 6 years (Figure 5).

Figure 5. Prevalence Of Drug Resistance In Culture-Positive TB Cases, Seattle-King County 1994-1999



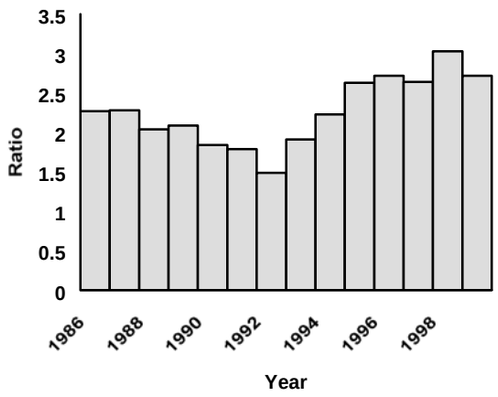
Of particular significance is the absence of cases of multiple drug-resistant TB (MDR-TB) in Seattle-King County since 1997. The prevalence of resistance to anti-tuberculosis drugs is an important indicator of the quality of TB control in a community. A rising prevalence of drug resistance generally indicates sub-optimal follow-up of patients and a low rate of completion of treatment. In that scenario, drug resistance (including MDR-TB) and increased person-to-person spread of TB often occur. As indicated in Figure 5, Seattle-King County has not experienced this pattern in recent years.

Suspect cases

During 1999 the TB Program received 283 reports of suspected cases, with 104 cases eventually confirmed as TB. Suspect reports originate with medical providers who encounter

persons with illnesses consistent with TB. Washington law requires that such patients be reported because important public health interventions, such as investigation of contacts, may be indicated immediately, even before the diagnosis is certain. The ratio of reported suspect cases to confirmed case has remained high and relatively constant over the past several years at about 2.5 suspect cases per confirmed TB case. This reflects an increased index of suspicion as medical practitioners have regained familiarity with TB as a clinical entity (Figure 6). Reporting of suspect tuberculosis cases, therefore, is an indicator of the awareness of TB by medical practitioners of Seattle-King County. It is also a measure of the work load for TB Program Staff, as reported TB suspects often require consultation, contact investigation, and monitoring of clinical status, cultures, and compliance with treatment, even though in 1999 only 37% of reported suspect cases were eventually confirmed as actual cases of TB. Among diagnoses other than tuberculosis that were ultimately given to TB suspects in 1999 were non-tuberculosis mycobacterial infection in 32 patients, lung cancer in 4 patients, and lung abscess and lymphoma, each in 1 patient.

Figure 6. Reported suspect TB/case Ratio Seattle-King County 1986-1999



TB clinic programs

Five 1999 TB cases (5%) were diagnosed on the basis of TB Program screening of high risk groups: 2 cases were diagnosed by screening newly-arrived immigrants determined to have abnormal X-rays during the immigration application process overseas and 3 were identified during contact investigations of active cases. Cases detected through screening activities are usually in an early, asymptomatic stage of TB, are rarely infectious, and respond very readily to treatment. Early pulmonary cases detected through screening activities may be viewed as averted future infectious cases of TB, minimizing illness and potential future transmission.

The Public Health TB Clinic continued to deliver extensive services to TB patients, contacts and other high risk groups during 1999. A total of 5,510 patients received services during the year, and the number of client visits totaled 20,733. Most (62%) clients receiving TB Clinic services were contacts of active cases and another 20% were refugees newly-arrived in the community from areas of high TB endemnicity. Among clients, 37% were white, 30% Asian, 21% Black or African-American, 9% Hispanic, and 2% Native American. Most (67%) clients served in the TB clinic during 1999 reported a family income below the poverty level. Department-wide, 16,110 tuberculin skin tests were performed, with 1853 (12%) determined to be positive (≥10mm). The race-associated rate of positive skin tests was: Asian 27%; Black or African-American 13%; Hispanic 9%; White 8%; and Native American 6%. Over 800 patients were started on preventive therapy for latent tuberculosis infection during 1999.

Directly-Observed Therapy

The TB Program's Directly-Observed Therapy (DOT) Team delivered more that 6,000 doses of TB medication directly to patients in the community during 1999. Verifying the success of that form of treatment for tuberculosis, a review of 44 cases of TB reported in the first half of 1999 – adjusted for deaths and transfers - showed that all of the 18 patients that received treatment through the DOT program completed treatment within 12 months. By comparison, 11 (70%) of the 16 patients who took TB medications under their own supervision completed treatment within 12 months**.**

Homeless

Among the 13 homeless persons reported with TB in 1999, six (46%) were housed by, or had housing temporarily supported by, the TB Program. Considering total utilization of TB respite facilities during 1999, 15 patients received some type of housing service or support. Respite housing is available to TB patients for whom that service is viewed to be essential to the successful completion of treatment. Since its establishment in 1995, the Housing Program, with an annual budget of only $20,800, has become a key component of the TB control plan for Seattle-King County.

The TB Program's Health Care for the Homeless Team conducted 36 screening sessions at shelters during the year. Eight of those screenings were associated with a case of TB and the other 28 constituted on-going surveillance in high risk settings. Of the 1,295 persons screened at those sessions, 896 tuberculin skin tests were administered and read, and 74 persons (8%) were determined to have newly-positive skin tests. 62 (84%) of those persons received further evaluations. No cases of active TB were found, and 25 (40%) of those evaluated started preventive therapy.

Refugees

The TB Clinic started a new refugee screening program in 1999. The program was developed in collaboration with the Public Health's Refugee Screening Program and

Harborview Medical Center's International Medicine Clinic and Community House Calls program. It is being funded by federal and state refugee programs and by grants from the Annie E. Casey Foundation and the Firland Foundation. Under the new program, intensive, culturally-appropriate outreach and interpreter services are employed to improve compliance with TB screening and treatment recommendations among newly-arrived refugees. Project staff also assist refugees with appropriate referrals to address other medical and social needs. Focus groups and other methods are also employed to learn more about specific refugee groups in order to develop the most effective and appropriate methods of serving each group. Over 1,400 refugees were screened for TB through this project in 1999, and preliminary data indicate that this program is achieving considerable success in motivating refugees to accept and to complete treatment of latent TB infection.

Community Support

The current decline in the incidence of TB in Seattle-King County may be attributable, at least in part, to this community's commitment to a strong program of TB control. As indicated by the diversity of programs described in this report, Seattle-King County has an authentically community-based approach to TB control, coordinated by the TB Program, but including a variety of partners and stakeholders such as area hospitals, community clinics, medical practitioners, clinical laboratories, social service agencies, and homeless shelters. Savings in resources that accrue from a continued decline in TB cases in Seattle-King County should be devoted in part to promoting community-based, targeted TB prevention efforts among population subgroups at greatest risk of tuberculosis. A continuing commitment to strong TB control efforts in the face of declining TB morbidity is essential to maintain the infrastructure necessary to prevent a resurgence in tuberculosis and the incursion of MDR-TB.

Disease Reporting (area code 206)

AIDS ..... ……296-4645
Communicable Disease……..296-4774
STDs ..... ……731-3954
Tuberculosis ..... ……731-4579
24-hr Report Line..... ……296-4782

Hotlines:

CD Hotline ..... ……296-4949
HIV/STD Hotline ..... ……205-STDS

http://www.metrokc.gov/health

Reported Cases of Selected Diseases Seattle-King County 2000

	Cases Reported In May		Cases Reported Through May	
	2000	1999	2000	1999
VACCINE-PREVENTABLE DISEASES				
Mumps	0	0	3	1
Measles	0	0	2	1
Pertussis	41	16	114	360
Rubella	0	0	1	2
SEXUALLY TRANSMITTED DISEASES				
Syphilis	6	5	30	36
Gonorrhea	94	69	452	396
Chlamydial infections	375	271	1869	1564
Herpes, genital	64	56	359	271
Pelvic Inflammatory Disease	13	21	96	111
Syphilis, late	2	5	15	17
ENTERIC DISEASES				
Giardiasis	11	19	93	72
Salmonellosis	24	19	91	69
Shigellosis	10	5	110	23
Campylobacteriosis	28	25	118	89
E.coli O157:H7	3	5	7	14
HEPATITIS				
Hepatitis A	10	11	56	40
Hepatitis B	4	3	17	12
Hepatitis C/non-A, non-B	1	0	3	2
AIDS	24	16	92	86
TUBERCULOSIS	11	7	48	45
MENINGITIS/INVASIVE DISEASE				
Haemophilus influenzae (cases < 6 years of age)	0	0	1	0
Meningococcal disease	1	1	8	11